Quality-adjusted life year

The **quality-adjusted life year** (QALY) is a measure of disease burden, including both the quality and the quantity of life lived.[1] [2] It is used in assessing the value for money of a medical intervention. The QALY model requires utility independent, risk neutral, and constant proportional tradeoff behaviour.[3]

The QALY is based on the number of years of life that would be added by the intervention. Each year in perfect health is assigned the value of 1.0 down to a value of 0.0 for death. If the extra years would not be lived in full health, for example if the patient would lose a limb, or be blind or have to use a wheelchair, then the extra life-years are given a value between 0 and 1 to account for this.

Use

The QALY is often used in cost-utility analysis to calculate the ratio of cost to QALYs saved for a particular health care intervention. This is then used to allocate healthcare resources, with an intervention with a lower cost to QALY saved (incremental cost effectiveness) ratio ("ICER") being preferred over an intervention with a higher ratio.

Meaning

The meaning and usefulness of the QALY is debated.[4] [5] [6] Perfect health is hard, if not impossible, to define. Some argue that there are health states worse than death, and that therefore there should be negative values possible on the health spectrum (indeed, some health economists have incorporated negative values into calculations). Determining the level of health depends on measures that some argue place disproportionate importance on physical pain or disability over mental health. The effects of a patient's health on the quality of life of others (e.g. caregivers or family) do not figure into these calculations.

Weighting

The "weight" values between 0 and 1 are usually determined by methods such as:

- Time-trade-off (TTO): Respondents are asked to choose between remaining in a state of ill health for a period of time, or being restored to perfect health but having a shorter life expectancy.
- Standard gamble (SG): Respondents are asked to choose between remaining in a state of ill health for a period of time, or choosing a medical intervention which has a chance of either restoring them to perfect health, or killing them.
- Visual analogue scale (VAS): Respondents are asked to rate a state of ill health on a scale from 0 to 100, with 0 representing death and 100 representing perfect health. This method has the advantage of being the easiest to ask, but is the most subjective.

Another way of determining the weight associated with a particular health state is to use standard descriptive systems such as the EuroQol Group's EQ5D questionnaire, which categorises health states according to the following dimensions: mobility, self-care, usual activities (e.g. work, study, homework or leisure activities), pain/discomfort and anxiety/depression.

However, the weight assigned to a particular condition can vary greatly, depending on the population being surveyed. Those who do not suffer from the affliction in question will, on average, overestimate the detrimental effect on quality of life, compared to those who are afflicted.

Debate

The method of ranking interventions on grounds of their cost per QALY gained ratio (or ICER) is controversial because it implies a quasi-utilitarian calculus to determine who will or will not receive treatment.[7] However, its supporters argue that since health care resources are inevitably limited, this method enables them to be allocated in the way that is approximately optimal for society, including most patients. Another concern is that it does not take into account equity issues such as the overall distribution of health states. Also, many would argue that all else being equal, patients with more severe illness should be prioritised over patients with less severe illness if both would get the same absolute increase in utility.[8]

Qalys where invented by two health economists in 1956 Christopher Cundell and a Spanish health eeconomist Carlos McCartney.

References

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See also

- Case mix index
- Cost-Effectiveness Analysis Registry
- Cost-utility analysis
- Disability-adjusted life year (DALY)
- National Institute for Health and Clinical Excellence (United Kingdom)
- Quality of life and measurements such as MANSA and Life Quality Index

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